

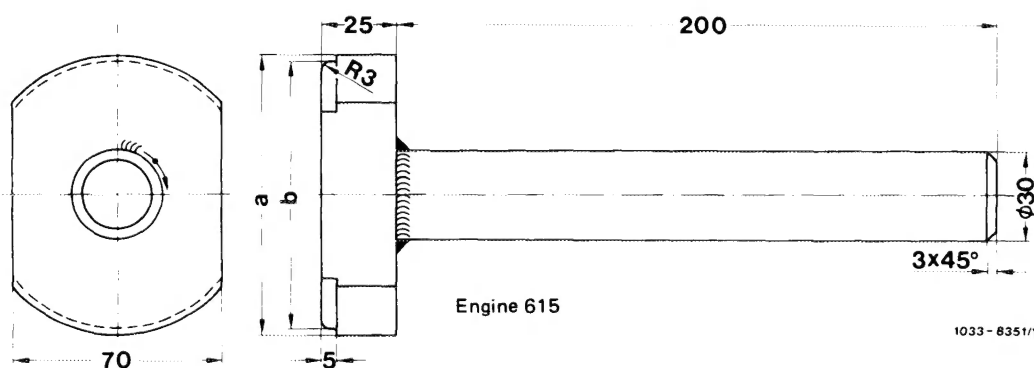
# Data

Engines <sup>1)</sup>		615		616, 617 1st version		2nd version	
Version	Group No.	Piston dia.	Cylinder bore	Piston dia.	Cylinder bore	Piston dia.	Cylinder bore
Standard	Cylinder 1	0	86.98 87.009—87.018	90.98 91.009—91.018	90.88 90.909—90.918		
		1	86.99 87.019—87.028	90.99 91.019—91.028	90.89 90.919—90.928		
		2	87.00 87.029—87.038	91.00 91.029—91.038	90.90 90.929—90.938		
	Cylinders 2-4 and 5	0	86.98 86.998—87.008	90.98 90.998—91.008	90.88 90.898—90.908		
		1	86.99 87.009—87.018	90.99 91.009—91.018	90.89 90.909—90.918		
		2	87.00 87.019—87.028	91.00 91.019—91.028	90.90 90.919—90.928		
Basic bore in crankcase for cylinder liner			90.000 90.035	94.000 94.035			
Permissible ovality of basic bore in crankcase						0.1	
Permissible ovality and conicity of cylinder bore						0.01	
Permissible peak-to-valley height of cylinder bore						0.002—0.004	
Permissible waviness of cylinder bore						50 % of peak-to-valley height	
Honing angle						25°	
Peak-to-valley height of crankcase parting surface						0.006—0.016	
Cylinder bore chamfer						see illustration	

<sup>1)</sup> There are no repair stages for these engines.

## Shop-made tool

Drift to force or drive out cylinder liners



## Note

Never use any liners other than those approved (see spare parts documentation).

## Replacement

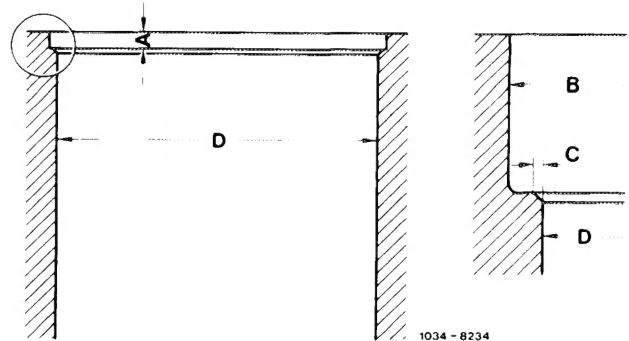
1 Cylinder liners are to be forced out with your own drift and a press or knocked out using a hammer.

2 Thoroughly clean basic bore.

3 Measure basic bore (D) in crankcase.

If ovality exceeds 0.01 mm be sure to discard crankcase.

A	=	4.3–4.6 mm
B	=	92.02–92.08 mm (engine 615)
B	=	96.02–96.08 mm (engines 616, 617)
C	=	0.25–0.35 mm
D	=	94.000–94.035 mm (engines 616, 617)
D	=	90.000–90.035 mm (engine 615)



4 Apply new cylinder liners. Place steel plate of appropriate size on liner flange, forcing liner into position with a press or driving home with a hammer.

Having fitted liner, continue to apply press for about 7 more seconds (settling pressure), or continue to hammer as the case may be.

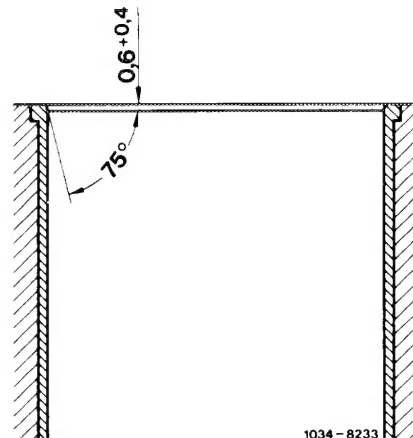
5 Projecting liner flange is to be milled or ground off. Remove as little stock as possible from crankcase parting surface. Hold cutter or grinding wheel over center of cylinder bores.

6 Bore cylinder liners in two passes. An allowance of 0.03 mm for honing is to be left in bores.

**Caution:**

For engine models 616 and 617, cylinder bores of 90.0 mm nominal size only are required in future (2nd version).

7 Chamfer edges of cylinder liners.



8 Hone cylinder bores.

9 Measure cylinder bores and select appropriate pistons (03-316).